FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Assessing wildland fire impacts on the nutritional performance and distribution of caribou within Alaska's boreal forest ecosystem

PRINCIPAL INVESTIGATOR: Bruce W. Dale

COOPERATORS: K. Joly and L. Adams (USGS)

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR: W-33-2

PROJECT NR: 3.44

WORK LOCATION: GMU 11, 12, 13 and 20E: The Nelchina, Copper and Upper Tanana River Drainages

STATE: Alaska

PERIOD: 1 July 2003–30 June 2004

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

Note: The project statement was amended during the previous segment period. Changes included a change in title and several objectives to reflect the ongoing collaboration between USGS and ADF&G in studying the influence of wildland fire on caribou.

OBJECTIVE 1: Determine the nutritional status of 4 cohorts of female caribou prior to their first winter.

During this segment period, we evaluated the nutritional status of the fourth cohort of female caribou prior to their second winter. These animals attained average body mass by age 16 months.

OBJECTIVE 2: Determine distribution and habitat use (relative to fire history and lichen abundance) of female caribou during their first winter.

By the end of this segment period, we have evaluated the monthly distribution and habitat use of approximately 100 caribou for each of the last 4 years. Caribou avoided recent fires

and most caribou apparently selected habitats with abundant fruticose lichens in winter. Caribou using the western winter range had superior nutritional performance over winter. However, the northern winter range was the most important to the population based on both nutritional performance and relative use. We generated one draft manuscript on this topic to be finalized and submitted during the next reporting period.

OBJECTIVE 3: Determine seasonal changes in body mass of young female caribou to evaluate the influence of fire history and lichen abundance on nutritional performance.

We collected the final data in October 2003. Summer weight change had a much greater influence on weight at 11 and 16 months than winter weight change. However, winter change in body mass has not been greater than zero since 1998 even though snow depths have been below average suggesting that winter resources are becoming more limited. We generated one draft manuscript on this topic to be finalized and submitted during the next reporting period.

OBJECTIVE 4: Evaluate influences of density, distribution, and habitat indices on changes in body mass.

We continued developing indices and summarized body mass data and have begun analyses and writing. Winter and summer distributions varied during the third year from the patterns seen during the first 2 years. The fourth year winter distribution was similar to the first 2 winters. Fewer caribou wintered on the current winter range and caribou were more disbursed during summer during the third year. Summer body weights, which were higher in the third year, returned to values similar to previous years.

OBJECTIVE 5: Evaluate relationships between distribution and survival.

We continued development of distribution indices and summarized annual survival data. We plan to incorporate theses data into a manuscript with those from Objective 4 during the next reporting period.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

Objective 1:

Job/Activity a. Capture and weigh at least 30 female caribou calves during the peak of calving

Activity not scheduled for this reporting period.

Job/Activity b. Capture, weigh, measure body parameters, radiocollar and collect blood samples from 40 5-month-old female caribou.

Activity not scheduled for this reporting period.

Objective 2:

Job/Activity a. Conduct periodic aerial-radio-telemetry flights.

Activity not scheduled for this reporting period.

Objective 3:
Job/Activity a. Recapture individual female caribou calves in April after their first winter and in October after their second summer.

No April captures were conducted during this reporting period. We recaptured and evaluated over-winter nutritional performance of the 25 surviving female calves from the 2002 cohort (Objective 1, Job B) starting the week of October 1, 2003.

No animals died due to capture or handling during this period.

Job/Activity b. Capture additional caribou, evaluate their nutritional status and fit with radiotransmitters as necessary to maintain sample sizes within each cohort.

Because this was the final fieldwork for the study, no additional animals were captured to maintain sample sizes.

Job/Activity c. Evaluate nutritional status and remove transmitters from caribou at 16-months of age.

We recaptured and measured over-summer nutritional performance of 25 surviving 16-month-old females from the 2002 cohort during the first week of October, 2003. Radiocollars were removed or replaced with adult collars at that time. These animals had attained an average weight of 78.4 kg which was about average (1999–2002 mean = 78.1 kg) even though this cohort had the largest body mass at birth. This further supports our conclusion that cohort specific variation in body mass may not persist through time. Individual variation in body mass did persist through time. In other words, small individuals at age 4 months tended to be small at age 16 months.

Objective 4:
Job/Activity a. Calculate distribution indices and compare to nutritional performance measures via appropriate regression techniques.

We developed indices during this segment period and drafted 2 manuscripts. The manuscripts will be reviewed prior to submission in September or October 2004.

Objective 5:
Job/Activity a. Calculate Kaplan-Meier survival estimates to describe basic survival functions of each cohort. Use logistic regression to evaluate the relationship between the density and distribution indices and probability of survival.

We summarized annual survival estimates for the year and compared these estimates to data from previous years. We evaluated relationships between density and survival and will incorporate those findings in a manuscript during the next reporting period.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

IV. PUBLICATIONS

A manuscript describing caribou movements relative to fire history was completed and has been accepted by the Canadian Journal of Zoology. Two additional manuscripts have been drafted and a third is in prep.

V. RECOMMENDATIONS FOR THIS PROJECT

VI. APPENDIX

VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE $32,798 STATE SHARE $10,932 = TOTAL $43,730

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APPROVAL DATE: _____